



Business Price Index: September 2017 quarter

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Methodology

This BPI release includes the September 2017 quarter PPI, CGPI, and FEPI data.

Response rates for September 2017 quarter

Key firms

Achieved: 100 percent

Target: 100 percent

Non-key firms

Achieved: 96.6 percent

Target: 96 percent

Exchange rates

The New Zealand dollar appreciated against four key currencies (US dollar, UK pound, Australian dollar and Japanese yen) and depreciated against the Euro, when comparing the mid-point of the September 2017 and June 2017 quarters. An appreciating NZ dollar has a downward influence on the prices New Zealand producers pay for imported goods and services, and the prices received for exports.

When calculating the PPI and CGPI, we generally use prices collected on the 15th day of the middle month in the quarter to represent the entire quarter. When these prices are collected in foreign currencies, they are converted to NZ dollars using the exchange rate at the mid-point of the quarter.

The table below shows changes in the value of the NZ dollar in foreign currency denominations, from the mid-point of the June 2017 quarter to the mid-point of the September 2017 quarter.

For a limited number of prices (e.g. petroleum product manufacturing) we use quarterly average prices. For these prices, the relevant exchange-rate movements are based on the average exchange rate for the quarter.

Business price index data collection

Methodology

From the March 2015 quarter, the producers price index (PPI) and capital goods price index (CGPI) information releases are together in an integrated quarterly business price indexes (BPI) information release.

Annual update of weights

After implementing the Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC06) in the March 2011 quarter, we update the producers price index (PPI) industry and commodity weights annually. We source the weights from the supply and use tables (SUT) produced annually as part of the New Zealand System of National Accounts. The weights associated with the commodities, and the weights attached to each industry, are therefore annually chain-linked. This reflects changes in economy-wide income and expenditure in the mix of products and the mix of industries.

The industry-based indexes in this release represent the mix of goods and/or services either used or supplied by that industry. We derive these weights from the percentage of income or expenditure that the respective goods and/or services represent. These weights are important because they help determine the overall index change that results from many price changes.

Industry reviews

In addition to the annual reweight, we are now reviewing the PPI. This work produces an up-to-date set of commodity proportions for use in the New Zealand Standard Industrial Output Categories (NZSIOC) level 4 index. These updated proportions are then used by national accounts to update the SUT, which in turn are used in the annual reweight.

Commodity reviews

In 2011, we began to review the commodities used within the PPIs. This work re-evaluates the sample of products we price, and the weights we apply to them within each commodity, to ensure they are relevant and fit for purpose.

Each commodity contributes to each industry index with a different weight, which we update annually based on the SUT, as discussed above. Each time it is used, it carries a weight that is relevant to the (sub-) index in which it is used. For example, diesel is used in varying amounts in each industry and is also an output of the retail, wholesale, and/or manufacturing industries.

Sources and methods document and weight tables

As part of a recent review of the scope and purpose of the PPI we made several decisions, one of which was to produce updated sources and methods documentation, including tables of PPI industry-by-commodity weights. We published the tables of industry weights with the April 2015 issue of Price Index News.

See Producers price index: concepts, sources, and methods to view the updated sources and methods.

See Producers price index weights to view the Excel tables of industry-by-commodity weights and the previously published industry weights.

See Review of scope and purpose of the producers price index for more information about the review.

Price collection

Most prices we use to calculate the BPI are obtained by the Commodity Price Survey (CPS), a quarterly postal survey. In general, we collect prices by the CPS at the 15th of the middle month of the quarter. For most commodities, we use mid-quarter prices to represent price change for the whole quarter.

The CPS is primarily questionnaire-based but also includes other methods of data collection, such as retrieving data from company websites, electronic returns from survey participants, and using a US Bureau of Labor Statistics measure of computer equipment prices.

We also use some of the data collected for the consumers price index and the labour cost index. Administrative sources also supply prices for calculating the PPI.

For commodities with particularly volatile prices and/or high weights, we try to collect or calculate average prices over the whole quarter. Examples include commodities sold at auction (eg fresh fruit and vegetables, livestock, wool, and dairy products).

Sample size

We price about 10,000 individual items for the BPI, from a survey of approximately 2,200 respondents.

Foreign-currency prices

In the CPS we ask respondents to quote prices in New Zealand dollars (NZD). However, in some cases this causes difficulty. Prices collected for imported goods are often denominated in foreign currencies (eg USD).

When calculating the BPI, we convert these currencies to NZD using the mid-quarter exchange rate for that currency; that is, divided by the bank selling rate at the 15th of the middle month of the quarter

Imputation

Some prices are not available at the time of price collection so we impute a small number of prices each quarter. This is often done by carrying forward the previous quarter's price. Other imputation is done by applying the price movements of similar categories of items.

Scope and coverage

Inputs PPI (ie prices paid by producers)

Producers price indexes of inputs (inputs PPI) relate to prices paid for goods and services. Inputs PPI measure changes in the prices of goods and services used by producers resident in New Zealand. Inputs PPI exclude labour, finance, and depreciation costs.

Inputs PPI cover the prices of:

- materials
- fuels and electricity
- transport and communication
- commission and contract services
- rent and lease of land, buildings, vehicles, and plant
- business services
- insurance premiums less claims.

Inputs PPI exclude:

- wages and salaries (measured in the labour cost index)
- capital expenditure/depreciation (measured in the CGPI)
- ACC levies, land tax, government licence fees, road-user charges
- rates
- royalties, patent fees
- bad debts and donations.

Outputs PPI (ie prices received by producers)

Producers price indexes of outputs (outputs PPI) are associated with prices charged for the supply of goods and services. Outputs PPI measure changes in the prices of goods and services sold by producers resident in New Zealand.

Outputs PPI cover the prices of:

- goods and/or services legally sold at market prices
- goods and/or services produced for own use by the productive sector.

Outputs PPI exclude:

- interest income and dividends
- royalties and patent fees

- receipts from insurance claims
- government cash grants and subsidies
- goods and services tax (GST) and other indirect taxes.

These indexes are designed to measure price changes before the addition of commodity taxes or deduction of subsidies.

Inputs PPI are available for all industries, while outputs PPI are not available for the public administration and safety, education and training, and health industries. Most outputs of these industries are non-market activities where the prices set, if any, are not directly measurable.

GST is generally excluded from the PPI.

Financial intermediation services indirectly measured (FISIM) in the PPI input indexes

We now include FISIM in the PPI input indexes (previously FISIM was only in the output PPI for the finance industry). We made this change from the March 2015 quarter.

FISIM is the general intermediation service provided by banks (and other financial intermediaries), which is not explicitly charged for but is implicitly charged for – through financial institutions lending money at higher interest rates than they pay to depositors (or organisations from which they borrow the funds).

This change is consistent with how we treat FISIM in the national accounts after implementing the System of National Accounts 2008.

Current industry classification for PPI

We assign an industry classification to every New Zealand business on the Statistics NZ Business Frame. The classification used is the Australian and New Zealand Standard Industrial Classification (ANZSIC).

See table 1 of Implementing ANZSIC 2006 in national accounts and productivity statistics for an explanation of the major differences between the two ANZSIC versions (published 2011).

We construct the PPI using ANZSIC06 as the basis for industry definition, and publish it using ANSIOC (see 'Industry publication level' below).

The ANZSIC06-based PPI is our official industry series.

Industry publication level

The level of industry detail we publish under ANZSIC06 is standardised across our publications. This maintains consistency and reflects the structure of the New Zealand economy. The New Zealand Standard Industrial Output Classification (NZSIOC) is our standard industry level for publication.

The industry definitions used in the PPI are constructed using ANZSIC06, but published using NZSIOC. We compile the PPI using the most-detailed level of the NZSIOC classification (level 4), which has 118 distinct industry groupings. Until the June 2015 quarter, the most-detailed PPI publication level was level 3 of the NZSIOC classification; however, from the September 2015 quarter, we are publishing selected level 4 industries.

Capital goods price index (CGPI) scope

The CGPI is a price index conceptually related to gross fixed capital formation in the System of National Accounts. However, it only measures prices for purchases of new fixed assets and not existing ones.

For example, we do not include second-hand trucks or buses, which may be heavily used by the productive sector, in the CGPI. Similarly, the CGPI prices the construction of new buildings and additions, but not the existing stock of buildings.

The CGPI is a Laspeyres base-weighted price index series. We determine the weights of the commodities by the relative importance within each of the asset type indexes. Weighting information is derived from statistics on external trade, manufacturing and building, and vehicle registrations, as well as discussions with manufacturers, importers, wholesalers, and retailers. We use data for several years, as expenditure on capital goods can be irregular. Goods and services tax (GST) is excluded from prices we use in this index.

Some fundamental differences exist between the CGPI and the PPI, even though both are generally based on the same data source – the Commodity Price Survey. The CGPI is primarily a product-based index, whereas the PPI is both an industry-based and a product-based index (for instance, inputs into the dairy product manufacturing industry).

The scope of the CGPI also differs from the PPI. The CGPI measures changes in prices for fixed assets rather than products used up by the productive sector within an accounting year. The inputs PPI covers goods and services used by the productive sector.

Farm expenses price index (FEPI) scope

FEPI provides information on changes in input costs for the New Zealand farming industry.

In the March 2014 quarter, we implemented changes resulting from our review of FEPI. We now publish all expenditure categories in FEPI quarterly.

FEPI is published for six different farm types:

Four that align with the NZSIOC:

- sheep, beef, and grain farms (from the December 2013 quarter)
- dairy cattle farms
- horticultural and fruit-growing farms
- poultry, deer, and other livestock farms (from the December 2013 quarter).

Two additional farm types:

- sheep and beef farms
- cropping and other farming.

These indexes now have an index reference period of the December 2013 quarter (=1000).

FEPI is different from the inputs PPI as it includes:

- local and central government rates and fees
- interest rates
- wages and salaries.

The FEPI interest rates input type measures changes in nominal interest rates. This method does not take into account the changing purchasing power of the value borrowed. This means that if more debt is required over time to buy the same piece of land (as the price of land increases), interest expenses would increase but the interest rate index in FEPI would not show that increase.

The weight for interest rates used in FEPI reflects the total amount paid by farmers in interest payments. This is different from the methodology used for the PPI.

Our treatment of insurance in FEPI is consistent with the PPI and national accounts. We use a 'net basis' (premiums less claims), where services insurance companies provide are considered to be the management of insurance, and we treat claims as a transfer between households and businesses.

We also changed the inputs PPI tables for agriculture to align with the NZSIOC. The new indexes for the farm types are 'sheep, beef cattle, and grain farming' and 'poultry, deer, and other livestock farming'.

The previous farm type indexes are still available as part of FEPI. (See the 'subtotal including livestock' indexes of FEPI, tables 6 and 7.)

Weight reference period

As part of classifying industries in the PPI using ANZSIC06, we updated the industry weights and the commodity weights that underlie the industry indexes. Also we introduced a system of annual updating of weights that use the SUT – produced as part of annual national accounts. We introduce updated PPI weights each March quarter. Therefore the March 2015 quarter introduced an updated weight reference period of the year to March 2012.

The years we use to calculate the FEPI weights range from 2009 to 2012. This is partly because of limitations of available data, and partly because the volatility of agricultural data means a two-or three-year average is more appropriate to use to represent a 'typical' year for weighting purposes.

Price reference period

The price reference period is the quarter that the latest quarter's prices are compared with in order to calculate indexes. After updating the weight reference period of the PPI (see above), our price reference period is the December 2014 quarter.

Index reference period

Our index reference period for the ANZSIC06-based PPI is the December 2010 quarter, so all indexes equal 1000 for this period. The choice of an index reference period is arbitrary and the percentage movements in the indexes are unaffected by the period chosen.

The CGPI indexes have an index reference period of the September 1999 quarter (=1000).

The FEPI indexes have an index reference period of the December 2013 quarter (=1000).

Consistency with previous PPI series

We used the previous ANZSIC96-based PPI series to provide a 'history' for each series of the ANZSIC06-based PPI series. The backcast series include all the published industry indexes. This gives backcast series as far back as the ANZSIC96-based PPI series are available (generally to the June 1994 quarter). The backcast series are linked to the directly calculated ANZSIC06-based series, at the December 2010 quarter.

Series references

The ANZSIC06-based PPI series have series references with the following pattern:

- PPI outputs (PPIQ.SQU*)
- PPI inputs (PPIQ.SQN*).

The * indicates the NZSIOC industry codes. These codes are shown in the tables beside each industry. For example, for horticulture and fruit growing, the NZSIOC code is AA11.

We reviewed the series appearing in the 'selected commodities table' (table 7). The updated selection has series references with the pattern PPIQ.SQCNN. The 'nn' indicates sequential numbers starting with 01.

Infoshare makes the two ANZSIC families of PPIs (ANZSIC96 and ANZSIC06) clearly distinguishable by naming the former series ANZIND and the latter series NZSIOC. ANZIND was the published level of ANZSIC96 which has been discontinued, while NZSIOC is the published level for ANZSIC06.

The CGPI series have series references with the following pattern:

- CEPQ.S2*

The FEPI series have series references with the following pattern:

- FPIQ.SE*

Contract indexation

Parties that engage in commercial contracts use our price indexes in their indexation clauses (also known as contract escalation clauses). An indexation clause provides both parties to a contract with an agreed procedure for adjusting an originally contracted price, to reflect changes in costs or prices during the contract's life.

Contract Indexation: A Guide for Businesses has information on our price indexes and issues relating to their use in indexation clauses. The guide also outlines points to consider when preparing an indexation clause, and includes an example of the mechanics of a simple indexation formula.

Pricing financial services

We categorise the output of the banking sector two ways. Firstly, there are services provided by banks (and other financial intermediaries) that are explicitly charged for, such as bank account fees. Secondly, there is the general intermediation service these businesses provide, which is not explicitly charged for, but is implicitly charged for – through financial institutions lending money at higher interest rates than they pay to depositors (or organisations from which they borrow the funds).

Pricing the explicit services provided by financial intermediaries is relatively straightforward, and the PPI outputs index for the finance industry contains prices to represent this component of their output.

Pricing the intermediation services provided by financial institutions that are not explicitly charged for is more problematic. Within the PPI outputs index, the approach we've adopted is to determine the differential interest rate (referred to as a 'spread') between banks' lending activities (referred to as 'claims') compared with their borrowing activities (referred to as 'funding'), and apply this spread to an inflation-adjusted base period value of financial intermediation.

The 'price' that we then derive can be thought of as the charge the banks implicitly make to intermediate sufficient funds needed to purchase a base period volume of goods/services. We source the claims and funding rates in this calculation from the Reserve Bank of New Zealand while the inflation adjustment is carried out using the all groups CPI.

See statistics (table B5 weighted average interest rates on NZD funding and claims: Registered banks).

The Reserve Bank figures may be revised if more complete information becomes available. We use the latest available Reserve Bank figures at the time the PPI is compiled (one month after the reference quarter) and do not update the PPI if the Reserve Bank figures are subsequently revised. These revisions tend to be small.

One limitation of our approach is that the weighted average interest rates on funding that we source from the Reserve Bank's published information exclude foreign-currency funding. This accounted for approximately 30 percent of total registered-bank funding at December 2008. The Reserve Bank has reported it is working with registered banks to collect this information. We will incorporate this additional information, to increase the coverage of bank funding interest rates in the PPI, when it becomes available.

If the levels of the foreign-currency funding interest rates are higher than the NZD currency funding rates, then the existing calculated spread would be too high. While this would influence the level of the calculated 'price' of the implicit intermediation service, it is important to note that the PPI measures price movements rather than price levels.

Thus, the lack of coverage of foreign-currency funding rates in calculating the spread would only appear in the PPI if the relative movements of the foreign-currency funding rates were significantly different from those of the NZD funding rates.

We have looked at indicative alternative sources of foreign-currency funding rates, and decided to continue to publish the existing index (which does not include foreign-currency funding rates) until reliable information on these rates becomes available.

Note: The NZD funding costs exclude the impact of hedging, for example interest rate-swap costs incurred against fixed-rate claims. This is because, for the PPI, we are interested in the rates contracted to by the parties to financial intermediation transactions. We consider the hedging arrangements, although affecting the bottom-line profit of the banks, to be separate transactions.

Customised price indexes

We have a large number of unpublished sub-industry and representative commodity price indexes. We use many of these for deflating current-price estimates in areas such as national accounts and tourism statistics.

These indexes are available at a small charge (to cover dissemination costs). More customised data is also available to cover specific needs but these cost more to develop.

Statistics in this release have been produced in accordance with the Official Statistics System principles and protocols for producers of Tier 1 statistics for quality. They conform to the Statistics NZ Methodological Standard for Reporting of Data Quality.